UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,116	09/18/2003	Scott Sibbett	ITL.0843US (P14804)	8422

21906 7590 08/16/2007

TROP PRUNER & HU, PC
1616 S. VOSS ROAD, SUITE 750
HOUSTON, TX 77057-2631

EXAMINER	
RODRIGUEZ, JOSEPH C	

ART UNIT	PAPER NUMBER
3653	

MAIL DATE	DELIVERY MODE
08/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/666,116	SIBBETT ET AL.	
	Examiner	Art Unit	
	Joseph C. Rodriguez	3653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-23 and 26-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-23 and 26-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Final Rejection

Applicant's arguments filed 6/11/07 have been fully considered but they are not persuasive for reasons detailed below.

The 35 U.S.C. 112 rejections are maintained or modified as follows:

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 23 and 27 recite limitations regarding "first and second electric field gradients". There is insufficient antecedent basis for these limitations in the claim.

The prior art rejections are maintained or modified as follows:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21-23 and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al. ("Soane")(US 5,750,015) in view of Ramsey (US 5,858,195).

Soane (Fig. 2) teaches a method comprising applying an electric field to a solution containing charged particles under conditions that will cause at least some of the charged particles to focus along the length of a first channel (22) formed in a device (col. 9, ln. 38-col. 10, ln. 12 teaching focusing of particles near at site 30 near second channels 24, 26, 28 using convective force; col. 4, ln. 24-31) and applying an electric field to the focused charged particles to cause the focused charged particles to focus at or near a second channel (Id.), said at least one second channel situated proximate an area where at least some of said charged particles have focused, and said at least one second channel transverse to said first channel and in communication therewith (Id. teaching reaction and focusing of mixture along first channel 22 and then separation into second channels 24, 26, 28 via electric fields as when "a component reaches a reaction site, the electrodes controlling the branch may be activated to provide bias which will move the component into the respective branch and out of the central trench" col. 9, ln. 58-60). Here, the use of a first and second electric field gradients manipulating positive or negative charged particles in specific directions is implicit from the teaching of fine control of the mixture along the various separation channels and the teaching that the electrodes are "capable of generating fields in a variety of different ways in or order to move the cells or viruses through the field based on size, ***charge***, or shape" (col. 9, ln. 3-col. 10, ln. 11). That is, Soane teaches the separation of materials

of positive or negative electrical charges and simply adapting the electric field to the specific charge type to move said materials (see also col. 7, ln. 18-30 teaching that in addition to convective force provided by traveling electrical waves separation can be achieved by using different voltages changed continuously over time to move particles based on charge). Further, Soane expressly teaches that the fields may be activated *simultaneously* (Abstract; col. 2, ln. 48-col. 3, ln. 63). Soane further teaches controlling the mixture separation in the various channels by electrical connections contacting the movement area in the form of intelligent integrated circuitry which is interactive with a computer system that activates the various electric fields, thus a step of detecting said charged particles in said at least one second channel via a change in conductivity is implicit (Abstract; col. 3, ln. 15-26). Soane also teaches the use of ports with reservoirs at the ends of the respective flow channels that apply a convective force using pumps (col. 9, ln. 11 et seq.).

Soane as set forth above thus teaches all that is claimed except for expressly teaching a sieve disposed in at least one second channel. Further, under an alternative interpretation, the steps of causing the focused negatively charged particles to become negatively charged and the negatively and positively charged particles to be focused in different directions may not be regarded as taught. These features, however, are well-known in the sorting arts. Ramsey teaches the use of sieves to provide even further separation in a microchip separation process (col. 30, ln. 14 et seq.). Further, Soane already teaches sophisticated electrode control that provides for the migration of the particle mixture using a variety of electric fields throughout his specification and

expressly teaches that the charge of the particle impacts the method of particle separation (Abstract; col. 2, ln. 48-col. 3, ln. 63; col. 4, ln. 24-31; col. 9, ln. 38-col. 10, ln. 12 teaching "networks are in connection with a plurality of electrodes capable of generating fields in a variety of different ways in order to move the cells or viruses through the fields based on the size, charge or shape..."). Moreover, it would be obvious to one with ordinary skill in the art to modify the prior art to arrive at the claimed invention based on these prior art teachings and in the nature of the problem being solved. Ramsey teaches that sieving is merely another method of particle separation that is known in the microchip arts and it is well established that the use of prior art elements according to their functions is a predictable variation that would yield predictable results, and thus cannot be regarded as a non-obvious modification when the modification is already commonly implemented in the prior art. With regards to the problem of separating positively and negatively charged particles, Soane expressly teaches that the charge can be a factor in the separation process and also teaches a sophisticated array of electrode neural networks to separate particles. Thus, when considering the level of sophistication discussed and cited in the prior art, it does not logically follow that one with ordinary skill in the art could would not know how to separate the particles as claimed based on the prior art teachings as it would be well within this skill level. Further, the mere charging of particles is also a known process step that further assists in the separation of particles based on charge that is also within this skill level. Therefore, it would have been obvious at the time the invention was

made to a person having ordinary skill in the art to modify the invention of Soane as claimed for the reasons set forth above.

Response to Arguments

Applicant's arguments that the prior art fails to teach the claimed features are unpersuasive in view of the newly formulated prior art rejection set forth above. Consequently, the claims stand rejected.

Examiner has maintained the prior art rejections, statutory rejections and drawing objections as previously stated and as modified above. Applicant's amendment necessitated any new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any references not explicitly discussed above but made of record are considered relevant to the prosecution of the instant application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Joseph C Rodriguez** whose telephone number is **571-272-6942** (M-F, 9 am – 6 pm, EST). The Supervisory Examiner is Patrick Mackey, **571-272-6916**. The **Official** fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

The examiner's **UNOFFICIAL Personal fax number** is **571-273-6942.**

Further, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private PMR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see **http://pair-direct.uspto.gov**

Should you have questions on access to the Private PMR system, contact the Electronic Business Center (EBC) at **866-217-9197** (Toll Free).

Signed by Examiner /Joseph Rodriguez/

Jcr

***

August 9, 2007